Science & Tech

Birth of a Black Hole?

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Scientists report they have witnessed what they believe is the birth of a black hole, an object so massive that not even light can escape from its gravitational pull.

Astrophysicist Derek Fox's cellphone rang at five in the morning on October 4, 2002. The call was from an orbiting satellite, notifying him that a massive star ten billion light years away had died. The High Energy Transient Explorer satellite, or HETE for short, had seen an enormous burst of gamma rays in the northern sky.

At a press conference in Washington Wednesday, Mr. Fox said that HETE's death notice gave scientists the best view yet of what was born from the ashes of the dying star. "If gamma ray bursts are the birth cries of black holes, then the HETE satellite has just let us into the delivery room," he said.

Gamma ray bursts are common, but they're easy to miss. That's because they only last a fraction of a second, or a few minutes, at most. Scientists have observed only two others. But this time, thanks to HETE's sharp spotting and instant notification, telescopes around the world began snapping pictures only minutes after the dying star began to explode.

A telescope in Japan caught the first picture just three minutes after the gamma ray burst began. But astronomer Stan Woosley, from the University of California at Santa Cruz, says there was more to come. "When the burst is over, it wasn't over. When the gamma rays ceased, there was still a large amount of energy, seemingly more than in the burst itself, inserted into this explosive event," he said.

The afterglow of the gamma ray burst went on for two hours undiminished. This was a surprise.

Astronomers say there are a number of things that can cause gamma ray bursts. But Mr. Woosley says the best explanation for this one is that the explosion heralded the death of a massive star, 35 times heavier than our sun, with a core of iron.

And at the end of its life, he says, it collapsed, crushing matter three times the mass of the sun down to a black hole just 10 miles wide, and releasing an incredible burst of gamma rays. "This gamma ray burst visible from the edge of the universe is gonna be produced from a region not as large as Washington, D.C.," he said. "And that's amazing to me still." He says the lingering afterglow was created as the black hole devoured the

equivalent of 100,000 earths every second.

The work appears in the current issue of the journal *Nature*.